



Biophysical and socioeconomic characterization of a water-stressed area and simulating agri-production estimates and land use planning under normal and extreme climatic events: A case study

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Year: 2008
Journal: Environmental Monitoring and Assessment. 142 (3-Jan): 97-108

Abstract:

This study aims in linking the biophysical and socioeconomic data base layers with the technical coefficients or simulation models for agri-production estimates and land use planning under normal and extreme climatic events, and exploring the resource and inputs management options in village Shikohpur, Gurgaon district located in the northwest part of India. The socioeconomic profile of Shikohpur is highly skewed with mostly small and marginal farmers. Though the areas under wheat in Shikohpur are increasing, the productivity is declining or remaining stagnant over the years. Most of the area during kharif season (June-September) remains fallow. Pearl millet based cropping systems (pearl millet-mustard and pearl millet-wheat) are predominant. Soils are mostly loamy sand to sandy loam with average of 70-80% sand content. Organic C content in soil is less than 0.3%, due to high prevailing temperature with little rainfall and also intensive agriculture followed in this region. Though the annual average seasonal rainfall in Gurgaon did not have much variation over the years, occurrence of extreme climate events has increased in the last two decades. The crop intensity is low and the water table is declining. Water and nitrogen production functions were developed for the important crops of the region, for their subsequent use in scheduling of the inputs. InfoCrop, WTGROWS and technical coefficients were used for crop planning and resource management under climate change and its variability, extreme events, limited resource availability and crop intensification. These will help in disseminating necessary agro-advisories to the farmers so that they will be able to manipulate the inputs and agronomic management practices for sustained agricultural production under normal as well as extreme climatic conditions.

Source: <http://dx.doi.org/10.1007/s10661-007-9911-z>

Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Climate Change and Human Health Literature Portal

Public

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Security

Food/Water Security: Agricultural Productivity

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: India

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Methodology

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

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Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content